



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/052,003	01/16/2002	Sooyoul Hong	155634-0130	9134
1622	7590	03/21/2005	EXAMINER	
IRELL & MANELLA LLP 840 NEWPORT CENTER DRIVE SUITE 400 NEWPORT BEACH, CA 92660			RICKMAN, HOLLY C	
			ART UNIT	PAPER NUMBER
			1773	

DATE MAILED: 03/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/052,003

Applicant(s)

HONG ET AL.

Examiner

Holly Rickman

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/27/04 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. The rejection of claims 1-10 under 35 U.S.C. 112, first paragraph, because the specification does not reasonably provide enablement for “a layer of anti-ferromagnetic material”, is withdrawn in view of the amendments to the claims.

4. Claims 1-10 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a Ru layer, does not reasonably provide enablement for “a layer of spacer material.” The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in

Art Unit: 1773

scope with these claims. The specification fails to provide support for the broad recitation of a “spacer” layer. Instead, the specification is limited to a Ru layer.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Do et al. (US 6372330) in view of Takahashi (US 6124020).

Do et al. disclose a magnetic recording medium having a non-magnetic substrate, an underlayer, a first magnetic layer, a non-magnetic spacer layer, a second magnetic layer, and another spacer layer thereon. Additional antiferromagnetically coupled magnetic layers are deposited thereon and an overcoat is deposited on top of these layers (see Fig. 6). The reference teaches that the non-magnetic spacer layers can be formed from any one of Ru, Cr, Rh, Ir, and Cu (col. 3, lines 57-66). An example is described wherein both spacer layers are formed from Ru (col. 8, lines 18-36). The reference also teaches that the spacer layer 36' can be formed from the same material used for the non-magnetic spacer layers. An example using a Cr layer is given (col. 8, lines 28-36). It would have been obvious to one of ordinary skill in the art at the time of invention to choose Cr from the group of spacer layer (36') materials disclosed by Do et al. in view of the functional equivalence of the materials.

Art Unit: 1773

The limitation “a layer of chromium located adjacent to said top magnetic layer, a portion of said chromium being located between said grains of said top magnetic layer” has been interpreted to mean that there is a layer of chromium on either side of (but not necessarily in direct contact with) the top magnetic layer and the top magnetic layer contains Cr between the magnetic grains therein.

Do et al. teach the use of granular ferromagnetic layers formed from CoPtCrB alloys. The reference does not specifically disclose that the granular ferromagnetic layers contain Cr at the grain boundaries. However, it is the examiner’s contention that this is an inherent feature of a “granular” CoPtCrB alloy. In any case, it would have been obvious to one of ordinary skill in the art at the time of invention to add Cr to the grain boundaries in the magnetic layers taught by Do et al.

Takahashi teaches a magnetic recording medium having a granular magnetic recording layer formed from a CoCr based alloy wherein Cr is present at the grain boundary regions in order to reduce medium noise and increase recording density (see col. 2, lines 25-43). The examiner maintains that Takahashi establishes that it is known in the art that a “granular” CoCr-based magnetic film contains Cr at the grain boundaries.

In the event that Applicant disputes this fact, it is also noted that the reference clearly establishes a motivation to add Cr to the grain boundaries of a CoCr-based granular magnetic layer. Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to add Cr to the grain boundaries of Takahashi in order to reduce medium noise and increase recording density as taught by Takahashi.

Art Unit: 1773

7. Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Do et al. (US 6372330) in view of Takahashi (US 6124020) and further in view of Bian et al. (US 6572989).

Do et al. in view of Takahashi teach all of the limitations of the claims as detailed above, except for the specific elements of the magnetic recording apparatus for use with the disclosed recording medium.

Bian et al. teaches a conventional disk drive structure which includes a recording medium, a plurality of actuator arms, a spindle and spindle motor, magnetic head, and a voice control motor (col. 5, lines 24-62).

It would have been obvious to one of ordinary skill in the art at the time of invention to use a conventional recording head assembly such as the one taught by Bian et al. in combination with the recording medium taught by Do et al. in order to form a functional disk drive.

Response to Arguments

8. Applicant's arguments filed 9/12/27/04 have been fully considered but they are moot in view of the new grounds of rejection set forth above.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Rickman whose telephone number is (571) 272-1514. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1773

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Holly Rickman
Primary Examiner
Art Unit 1773

March 15, 2005